University College London Hospitals NHS Foundation Trust

Title: Virology User Manual

Code:	VIR-MM-UserManual
Version:	16.0
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Authorised At Date:	03-Feb-2015
Review On Date:	03-Feb-2017
Location Of Copy:	Clinical Virology UCH
Document Status:	Authorised
Ou Name:	Virology

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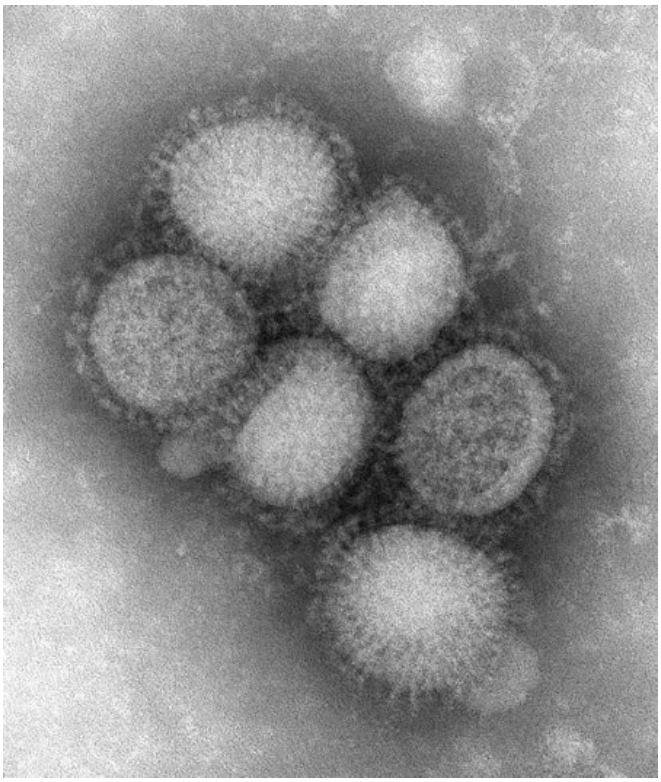
UCLH NHS FOUNDATION TRUST

DEPARTMENT OF VIROLOGY

USER MANUAL



Version 16

January 2015

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MISSION STATEMENT

We aim to provide our users with:

- An exemplary diagnostic virology laboratory service
- An expert clinical advisory service for the diagnosis, management and control of infections
- Assistance with the investigation of infectious disease outbreaks
- Advisory support for emerging viral infections
- A rapid response to comments, requests and criticisms

INTRODUCTION

The Virology Laboratory, University College London Hospitals NHS Foundation Trust is accredited by Clinical Pathology Accreditation (UK) Limited and performs in excess of 400,000 tests per year. The department is also licenced by the HTA under the Quality and Safety (tissue and cells) Regulations, Human Application Sector. In addition to the routinely available tests used to diagnose and monitor viral infections the assay development group of the department develops and provides novel molecular diagnostic assays. The Virology Laboratory is an acknowledged reference laboratory for HIV, hepatitis B, hepatitis C and molecular diagnosis and has a special interest and expertise in:

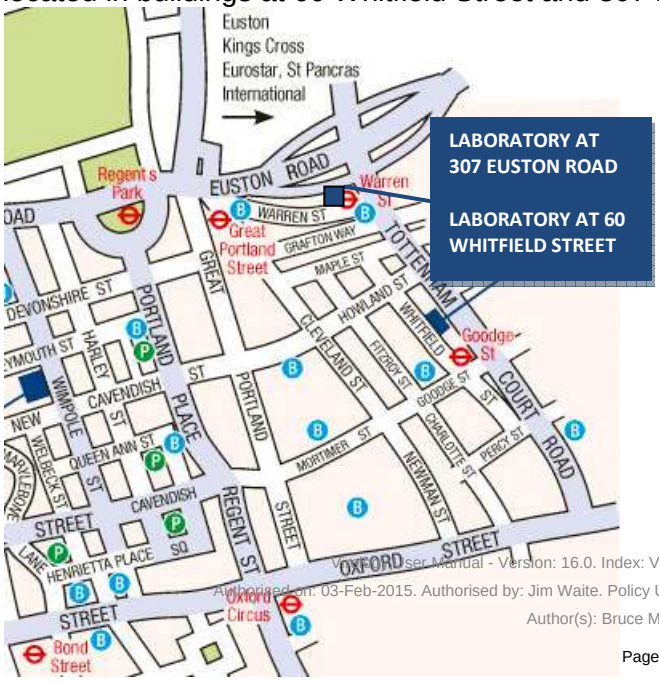
(1) HIV and other retroviral infections
(2) Viral hepatitis, especially hepatitis B and C infections
(3) Respiratory viral infections
(4) Viral infections in the immunocompromised patient
(5) Viral infections of the foetus
(6) Molecular testing for MRSA, Chlamydia Trachomatis (CT) and Neisseria Gonorrhoea (GC)

Medical and laboratory staff are happy to discuss any problems relating to the diagnosis and management of patients with viral infections and also with any issues about the quality of the service provided to you.

This manual is intended to enable all users to make best use of the various services provided, ensuring an accessible, equitable and efficient service.

LOCATION

The Virology Laboratories, University College London Hospitals NHS Foundation Trust, London are located in buildings at 60 Whitfield Street and 307 Euston Road.



Nearest tube stations:

- Warren Street Tube Station (Northern Line, Victoria Line)
- Goodge Street Tube Station (Northern Line)

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POSTAL ADDRESS

Virology Laboratory, Clinical Microbiology and Virology
University College London Hospitals NHS Foundation Trust
60 Whitfield Street
London
W1T 4EU

Internet address: www.uclh.nhs.uk

WORKING HOURS

Routine opening
Monday to Friday 8 am to 8 pm
Saturday and Sunday 9am to 3pm
Specimens cannot be received outside these times without prior arrangement.

Out of hours
Requests for the provision of laboratory testing outside normal working hours may be accommodated under exceptional circumstances. These should be arranged with the consultant on-call who may be air-called through the UCLH switchboard (020 3456 7890 / 0845 155 5000).

Consultant advice
Advice on the diagnosis, treatment and containment of viral infections in patients is available at any time through the 24 hour consultant led on-call service. The consultant providing this cover is always contactable through the UCLH switchboard (020 3456 7890 / 0845 155 5000).

CONTACTING US DURING WORKING HOURS

To contact us regarding **laboratory enquiries**

General enquiries	020 344 78994
Fax	020 344 79211
Serology results	020 344 78994
Molecular results	020 344 78964 / 020 344 78982

To contact us for **medical advice**

Duty SpR	020 344 78986 / 78975 07946 202 872 (mobile)

CONTACTING US OUT OF WORKING HOURS

On call Consultant	via the UCLH Switchboard (020 3456 7890 / 0845 155 5000) ask for the on-call Virologist (pager 299)

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KEY CONTACTS - LABORATORY

Mr Jim Waite — BSc, FIBMS
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020 344 78979

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KEY CONTACTS – CONSULTANTS

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KEY CONTACTS – SERVICE

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020 3447 8317

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The Laboratory's Policy on Protection of Personal Information

It is a condition of employment within UCLH that staff observe and comply with the Trust Information Governance Policy and related policies and procedures when handling personal data in the course of their work. This includes personal data relating to any patient, employee, customer, client, third party supplier or agent of UCLH. It is a condition of employment that under no circumstances will such information be passed on or discussed with any unauthorised person

All users of UCLH data, whether employees, honorary contract holders, third party suppliers or other employees of partner organizations are subject to the following:

Code of Conduct for Users of UCLH Information
Information Governance Policy
Information Systems - Acceptable Use Requirements
Other related guidance and polices provided by UCLH.

These policies are available on the Trust intranet site at
http://insight/Pages/TempSearch.aspx?k=Data%20protection&s=All%20Sites

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SERVICES AVAILABLE

Diagnosing viral infections: a brief guide

Tests for recent infection:

(1) Polymerase chain reaction (PCR) for detection of viral nucleic acid (either RNA or DNA) is our front line assay to detect many viral pathogens. Preferred specimens are from the anatomical site where the suspect virus is, as early as possible in the course of infection. For example, in suspected respiratory infection please collect respiratory specimens rather than blood for antibodies and, in patients with vesicular rash or genital ulcers, send us a lesion swab rather than blood for antibodies.
(2) In non-specific illnesses such as malaise, tiredness, myalgia etc., unless there are localising symptoms/signs, it is not worth sending blood specimens without discussion with Virology first.
(3) Blood specimens (EDTA) remain useful, especially for HIV, hepatitis viruses, HTLV, parvovirus B19, measles, rubella and EBV. Please do not send blood for respiratory or gastrointestinal viruses.
(4) Please provide brief patient clinical details with duration of illness (date of onset), which allows us to choose appropriate tests and any relevant travel and exposure history.
(5) Our laboratory also provides a diagnostic service for syphilis (send clotted blood for serological investigations and/or ulcer swab for PCR) and for Lyme disease (send clotted blood for serological investigations). Please refer to Virology test repertoire table on page 15 for preferred specimen type.
(6) Molecular MRSA testing service (send red topped swab).
(7) Molecular Chlamydia and GC testing service.

Please see also table showing diseases and specimens to be collected for virological diagnosis later in this manual.

Tests for immunity:

(1) Post-vaccine testing for immunity is NOT routinely recommended for measles, mumps, VZV and hepatitis A as the assays used are reliable to detect vaccine induced IgG.
(2) Please inform us of the dates and doses of HBV or rubella vaccines administered.
(3) We can test for previous exposure and / or immunity to: CMV, EBV, parvovirus B19, hepatitis A, hepatitis B and VZV.

Urgent specimens

(1) Pregnant, in recent contact with a case of chickenpox: if there is clear history of chickenpox in the past, no testing is necessary. Otherwise, please supply details of date of contact and type of contact (face-to-face / same room for 15 mins / own child).

(2) For all other urgent testing please phone the laboratory so that we can identify your patient's specimen. Please include your contact number on the request form.

What NOT to do…….

In order to get the best out of the diagnostic service, please:

- avoid the terms 'viral titres' and 'TORCH screen', they are confusing and obsolete
- do not send ANY unsigned request forms, especially for HIV testing
- do not send request forms without the patient's date of birth and your contact number
- do not send specimens from suspected chronic fatigue syndrome: contact Virologist first for discussion.

HIGH RISK SPECIMENS AND SAFETY

For suspected viral haemorrhagic fever or SARS or other exotic viruses in a returning traveller: contact the duty Virologist and Infectious/Tropical Diseases team for discussion as investigating for these pathogens might have significant infection control implications.

Specimens from patients with a suspected viral haemorrhagic fever (a history of having returned from West Africa, within 21 days) are HIGH RISK. Contact the on-call Virologist before sending any specimens to the laboratories. The consultant virologist will advise on the appropriate specimens to be collected and appropriate transport. High risk specimens must be sent to the laboratory using appropriate packaging.

VIRAL HAEMORRHAGIC FEVER (EBOLA, MARBURG, LASSA, CCHF)

AVIAN INFLUENZA / MERS CORONAVIRUS / H7N9 INFLUENZA

Contact Virologist immediately - Air call on call Virologist (pager 299) through UCLH switchboard (020 3456 7890 / 0845 155 5000).

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REQUEST FORMS

Request forms are clearly labelled as “Virology” request forms and have a bag attached for the specimen. Please send requests for Virology on a separate form from requests going to other departments. Ideally serology and molecular requests should be sent on separate request forms. Specimens accompanied by the wrong, or inadequately completed, request form may result in unnecessary delays.

Three unique patient identifiers are required for accepting a sample for testing in Virology.

These are:

- First name with family name + hospital number or NHS number + DOBSamples with a complete Clinic code – e.g. GUM clinic coding are accepted

All dataset options defined above must match on both request and sample for acceptance. The sample is taken as the correct reference of information against which information on forms received will be compared in the event of minor discrepancies.
Samples may be rejected if the minimum dataset is not provided.

Information also required on the request form includes

- Gender
- Location or contact details for the patient
- Ward or Address for report
- Requestor identification and contact details
- For hospital patients, please provide details of the patient’s consultant
- Date and time specimen taken
- Type of specimen
- Tests required. Please avoid general terms such as “viral screen” as this may lead to delays in processing the specimen appropriately

Other useful details

- Bleep number or mobile number, in order to phone significant results
- All relevant clinical details including:
    - Date of onset and duration of illness
    - History of foreign travel including return dates
    - If pregnant, please indicate the gestational age
    - Relevant treatment history
    - Exposure history
    - History of drug administration

The importance of accuracy when completing the form, labelling the specimen, and the provision of relevant clinical details cannot be over-emphasised. For patient safety reasons, mislabelled specimens may not be processed.

If a decision is made to accept a sample that does not meet the criteria listed ABOVE a ‘disclaimer’ is added to the final report explaining the limitations of the test and result issued for the situation.

Please see table for sample type and volumes required for different assays on page 16

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COLLECTION OF SPECIMENS

In order to provide you with the best quality results, it is essential that good specimens are collected properly and at the appropriate time. It is also important that they are transported to the laboratory without undue delay. This enables the laboratory and the medical staff to provide a meaningful report and an interpretation relevant to the patient's illness.

Inappropriate specimens or those that are damaged or leaking are liable to be discarded. Should this occur, every attempt will be made to inform the user that a second specimen may be required.
If unvalidated samples are tested a disclaimer will be added to the final report explaining the limitations of the test.

Specimen collection
Please ensure that the correct specimen container is used. If unsure which specimen type to examine or how to collect a particular specimen type, please contact the laboratory (020 344 78994) for advice.
Information for Trust users on the proper collection of blood samples is available here on the Phlebotomy page on Insight.
http://insight/departments/medicineboard/pathology/haematologypathology/Phlebotomy/Pages/default.aspx

Dry swabs are not appropriate. For genital ulcers, vesicular rash, eye swabs and respiratory swabs. please use Copan brand swabs which come with their own vial of transport medium in the same packet and which have a long shelf life at room temperature.

- These can be ordered through NHS Logistics; code HHD 116 for the small 1mL container
- Use the swab provided: snap off into the bottle and replace cap. Complete patient details

CSF should be sent in a sterile Universal container not in transport medium.

Please use red topped double headed swabs for molecular MRSA screening.
Aptima swabs are available for unisex and self-taken samples. Urine collection kits are also available for CT/GC molecular tests.

Blood samples collected into EDTA purple capped containers OR EDTA plasma are required for all molecular testing. Serum and blood samples collected in lithium heparin, or heparin are not suitable for molecular tests and will be rejected.
For serological tests only a clotted (red top) or SST (yellow top) blood or serum are the samples of choice. Other blood samples may be rejected.

IF BOTH VIRAL SEROLOGY (ANTIBODY TESTING) and MOLECULAR (PCR) INVESTIGATIONS ARE REQUIRED, PLEASE SEND TWO BLOOD SPECIMENS - one clotted or yellow top for serological investigations and one purple top for molecular investigations.

For most single investigations a minimum volume of 4-5ml of blood is required. Larger volumes will be needed for multiple investigations or two separate specimens where both serological and molecular testing is required. Neonatal / paediatric specimens should indicate the priority tests when small volumes are sent.

Please contact the laboratory for further guidance on specimen volumes if only a small volume is available.

If sending separated plasma or serum ensure all tubes are clearly labelled as to the contents.

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SPECIMEN LABELLING

Complete patient details must be clearly marked on **BOTH** the request form **AND** the specimen container before insertion into the plastic bag and before it is sealed ready for transportation. Do not use pins or staples as this is hazardous.

The specimen must be labelled with the same patient details as that on the request form.
Please ensure that the full patient name and the date of specimen collection are legible. The sample is taken as the correct reference of information against which information on forms received will be compared in the event of minor discrepancies.

The importance of accuracy when completing the form, labelling the specimen, and the provision of relevant clinical details cannot be over-emphasised. For patient safety reasons, mislabelled specimens may not be processed.

TRANSPORT OF SPECIMENS

Specimens should be sent direct to the Virology Specimen Reception at 60 Whitfield Street W1T 4EU as soon as possible after collection. If there is a transport delay samples should be refrigerated. Samples older than seven days since collection should be discarded and a repeat collected.

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Routine specimens
Routine specimens from UCH should be sent via the pneumatic tube system. Specimens from other sites, including GPs, should be sent using the regular courier service to 60 Whitfield Street. Specimens may also be sent by post. Please refer to the Trust policy:
http://insight/pandp/Trustwide%20policies1/Specimen%20and%20PTS%20Transport%20Policy%20and%20Procedure.pdf

Urgent requests – refer to Page 5 for the correct numbers
- During working hours – discuss with the laboratory first
- Out-of-hours – discuss with on-call Virologist, including transport to the laboratory

On rare occasions, the quickest way to get an urgent specimen to the Virology laboratory may be for a member of ward staff to carry it instead of calling a medical courier. In this situation, staff should always carry the specimen in a suitable rigid container. Such containers should be available on each ward. Spare/replacement containers can be obtained from Virology Specimen Reception at 60 Whitfield Street.

The sender is responsible for ensuring the health and safety of any courier or taxi service that is used to transport specimens to the Clinical Virology laboratory.

If sent by post or by external courier, specimens must be in a sealed container, sealed in a plastic bag. The primary container must be surrounded by sufficient absorbent packing material to take up any leakage from the primary container during transit. Bags must then be placed in an approved outer container which satisfies current postal or other transport regulations.

Guidance on the transporting of specimens, including specimens requiring category A transport when being transported by road in the UK, may be found at:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48846/guidance-note-17.pdf.

Guidance on sending samples via Royal Mail can be found at::
http://www.royalmail.com/general-correspondence/mailroom-management/safebox

VIROLOGY CUT OFF TIMES

Virology cut-off times for processing specimens with a same day turnaround time (TAT).

Specimen type	Assay	Cut for time for processing	Results available
Respiratory specimen	**Respiratory PCR** (Influenza, RSV, ParaFlu, Metapneumovirus, Adenovirus)	11.00	16.30
Faeces	**Gastro PCR** (Norovirus, Rotavirus, Adenovirus)	11.00	16.30

COMMUNICATION OF RESULTS

- Electronic reports are exported to downstream systems (to CDR for UCLH, to CELLMA for Mortimer Market and Archway clinics, and for General Practitioners to GPLINKS, GPPORTAL and the Community Browser).
- Automatic electronic faxing of reports is used for some requestors and this is set up within the Laboratory Information System.
- Non-electronic reports are printed twice a day and are dispatched by post Monday to Friday.

All clinically relevant and urgent positive results are telephoned out to our users by one of the medical staff. For reasons of confidentiality, results are only faxed to “safe-haven fax numbers”.

MEDICAL ADVICE

Advice on the diagnosis, treatment and containment of viral infections in patients is available at any time through the 24 hour consultant led on-call service. The consultant providing this cover is always contactable through the UCLH switchboard (020 3456 7890 / 0845 155 5000).

LIMITATIONS AND UNCERTAINTIES

A variety of key factors impact upon the uncertainty of results of virological testing.

Pre testing
Outside factors that can affect the outcome of investigations include the delay from specimen collection to testing and sample storage conditions prior to and during transport to the laboratory. For quantitative molecular testing in particular, a significant delay in transit to the laboratory may result in inaccurate estimation of viral loads.

Note that if a patient has recently received a blood transfusion or blood products, this can result in misleading antibody test results.

Most assays have not been validated for cadaveric specimens.

Copan swabs should be used and placed in viral transport medium. Swabs in bacterial transport medium will not be tested.

Whole bloods should be sent to the laboratory to arrive within a maximum of 72 hours of being taken. If sending is likely to be delayed, whole bloods may be separated and stored as plasma/serum prior to transportation. This should be performed as soon as possible after collection.

Plasma or serum samples may be stored at 2-8C for no longer than 7 days. They should be frozen at -20C or below if being stored longer. Repeated freeze-thaw cycles may reduce assay sensitivity.

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Note that EDTA blood is the sample of choice for molecular assays, clotted or heparinised specimens have not been validated and may give rise to erroneous results. If unvalidated samples are tested a disclaimer will be added to the final report explaining the limitations of the test.
Urine samples for CT/GC testing should be kept refrigerated to prevent the overgrowth of bacteria which may interfere with the result.

Testing
Results from specimens that are heat inactivated, haemolysed, and lipaemic or heavily bacterially contaminated may not be accurate. Such specimens may be unsuitable for testing and should not be sent.
Small volume samples:

Small volume urgent or precious samples may be diluted and tested at the discretion of the laboratory. Diluting samples may compromise the accuracy of PCR. A repeat sample may be requested if clinically indicated

- The **maximum** dilution allowed for a viral loads is 1:5 , For very small volume samples, an "insufficient" comment will be issued.

Post testing
All results must be interpreted with reference to clinical information. In many cases clinical comments will be provided with results but it may not be possible to properly interpret results where clinical information has not been provided with the request. Medical staff are available in the laboratory during working hours and on-call (out of hours) to discuss cases and provide guidance on the diagnosis and management of infectious diseases.

The absence of detectable markers does not necessarily exclude the possibility of infection, especially in the early acute phase.

QUALITY ASSURANCE

The laboratory is accredited with CPA/UKAS. . For full details please refer to the UKAS website http://www.ukas.com/services/CPA/Clinical_Pathology_Accreditation_CPA.asp. The laboratory is currently working towards meeting the requirements of ISO15189 and is due an inspection under these standards in 2016. See appendix 1 for a copy of the current CPA certificate.

The results sent out by this laboratory are of the highest possible quality. To this end we have a Quality Management System (QMS) that meets CPA/UKAS standards. The laboratory also participates in various inter laboratory comparison schemes including the UK National External Quality Assessment Scheme (UKNEQAS) and Quality Control for Molecular Diagnostics (QCMD) for a wide range of virological investigations. Where tests performed are not covered by UKNEQAS or QCMD, alternative sources of EQA material or exchange of samples with other laboratories is used to provide external quality assurance. See appendix 2 for a copy of all EQA schemes and interlaboratory comparisons the laboratory participates in. Our results and ongoing performance are available for inspection.

An annual User Survey is undertaken to receive feedback on the service and to review testing profiles and indicate where improvements to the overall service may be made.

COMPLAINTS

If you wish to make a complaint, please contact the Virology General Manager or Consultant Virologist and your complaint will be dealt with promptly.

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TURNAROUND TIMES, SPECIMEN TYPES and INVESTIGATIONS

In the following sections you will find details of the different diagnostic tests available in our lab, the specimen required and the turnaround time for results. The tests are presented in the following groups:

- Hepatitis viruses (hepatitis A, hepatitis B, hepatitis C, delta and hepatitis E viruses)
- Retroviruses (HIV-1, HIV-2, HTLV)
- Herpes viruses (CMV, EBV, herpes simplex virus, VZV, HHV-6 & 7, KSHV [aka HHV8])
- Exotic/tropical viruses (including arboviruses, dengue, West Nile virus, Lassa fever virus, Avian influenza H5N1)
- Other viruses (or infective agents for which routine testing is performed in the Virology laboratory) in alphabetical order, including lyme and syphilis testing
- Screening profiles (Antenatal, Occupational Health, Needlestick donor and Needlestick recipient screening batteries)
- Molecular MRSA results are normally reported within the same working day if received by 2:30pm
- Chlamydia/GC molecular results are normally available with 48 hours of receipt of specimen
- Other reference laboratory investigations

Turnaround times in all the following tables are defined as the number of working days (Monday to Sunday) from receipt of the specimen to result authorisation and availability on IT.

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RETENTION OF SPECIMENS AND REQUESTING OF ADDITIONAL TESTS

Original blood specimens are retained for approximately one week. Plasma from ante-natal booking blood specimens, needlestick related specimens and aliquots from specimens for molecular tests are retained for 2 years. Within this time frame, additional tests can be requested on these specimens by telephone or fax. The corresponding period of retention for urine, swab and stool specimens is 3 weeks. Documentation for Donor and Recipient samples are stored for 10 and 30 years respectively, in line with HTA regulations .

REFERENCE LABORATORIES

Samples may be referred to Reference laboratories for more specific tests where routine testing at UCLH is not provided. These are listed throughout the tables on the following pages.

If an investigation you require is not listed in the following tables, please call the virology department for advice. We will receive the specimen in our laboratory and refer it to the most appropriate reference facility.

Turnaround times for the different tests vary. Please consult with the laboratory if specific information re turnaround times is required. Further information may be obtainable direct from the individual reference laboratories. Full addresses of the reference laboratories used and their other contact details are available on request.

OTHER SEROLOGY

Serological and antibody/antigen detection:

Investigations for the following are performed:

- Anti-streptolysin-O (ASO)
- Brucella antibodies
- Investigations for *H. pylori* (Antigen test performed on faeces)
- Mycoplasma antibody
- Syphilis antibody on CSF
- Toxoplasma antibody

DISEASES AND SPECIMENS TO BE COLLECTED FOR VIROLOGICAL DIAGNOSIS

☑ = Preferred specimen ✓ = Second choice specimen

			Lesion specimens				Respiratory specimens (one is enough)					Other specimens		Blood
			Copan swabs in VTM						Others					
System involved	**Clinical features**	**Common pathogens**	**Vesicle**	**Eye**	**Conjun-ctival**	**Genital**	**Mouth / oral**	**Throat and nasal**	**Throat gargle**	**Sputum**	**NPA (children)**	**CSF**	**Faeces**	**Acute + Post**
Systemic	Pyrexia	Influenza (in the season)						☑	✓	☑	✓			
	Lymphadenopathy	EBV (<40 years), CMV, consider HIV if risk factors exist												☑
Respiratory	Common cold, croup, bronchiolitis, 'flu', pharyngitis	Parainfluenza virus, EBV, Adenovirus, Influenza virus					☑	☑	✓		☑			
Gastrointestinal	Gastroenteritis	Rotavirus (infants and elderly), Norovirus											☑	
	Hepatitis	HAV, HBV, HCV												☑
Nervous system	Aseptic meningitis Encephalitis	Enterovirus HSV, VZV, Mumps						✓				☑	✓	✓
	Febrile convulsions	Any virus						☑				☑	☑	☑
	Peripheral neuropathy	Viral aetiology is rare in UK	Contact the duty Virologist to discuss possibilities based on the patient travel history											
Ophthalmic	Conjunctivitis, Keratitis	Adenovirus, HSV, VZV		☑	☑									
Genito-urinary (GUM)	Suspected HIV													☑
	Vesicles / ulcers	Syphilis	☑			☑								☑
	Vesicles / ulcers	HSV	☑			☑								
Skin and mucosa	Mouth ulcers	HSV, Enterovirus	☑				☑							
	Maculopapular rash	Measles, Parvovirus B19, Enterovirus, Rubella, HHV6&7, Syphilis					☑ measles	☑ measles						☑
	Vesicular rash	VZV, HSV, Enterovirus	☑			☑		☑						✓
	Nodule	Molluscum contagiosum	Consider sending nodule biopsy											
	Warts or CIN	HPV	Contact the duty Virologist											
Haematological	Persistent anaemia	Parvovirus B19												☑
	Thrombocytopenia	EBV, Parvo B19												☑

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	Atypical lymphocytes	EBV, CMV												☑

UCLH VIROLOGY TEST REPERTOIRE AND TURNAROUND TIMES

In the following sections you will find details of the different diagnostic tests available in our laboratory, the specimen required and the turnaround time for results. **For most single investigations a minimum of 4-5 mls of blood is required**. **Larger volumes may be needed for multiple investigations or two separate specimens where both serological and molecular testing is required. Neonatal / paediatric specimens should indicate the priority tests when small volumes are sent**

HEPATITIS VIRUSES				
VIRUS	**TEST**	**SPECIMEN**	**FREQUENCY OF TEST**	**TURNAROUND TIME**
Hepatitis A	Hepatitis A IgG + IgM	Clotted blood	Daily (Mon – Sun)	1-2 working days
Hepatitis B	All serological markers including anti-HBs	Clotted blood	Daily (Mon – Sun)	1-2 working days *Same day if urgent*
	HBsAg quantitation	EDTA blood	On request	2-7 working days
	HBV DNA quantification (with or without “e” markers: please specify)	EDTA blood	Daily (Mon – Fri)	3-7 working days
	HBV genotyping/resistance testing	EDTA blood	Twice weekly (Mon & Weds)	5-10 working days
Hepatitis C	Antibody	Clotted blood	Daily (Mon – Sun)	1-2 working days *Same day if urgent*
	HCV RNA detection/quantification	EDTA blood	Daily (Mon – Fri)	3-7 working days
	HCV genotyping (including resistance)	EDTA blood	Twice weekly (Mon & Weds)	5-10 working days
Hepatitis D	Delta virus (HDV) serology screen	Clotted blood	Weekly	7-10 working days
	HDV RNA detection / quantification	EDTA blood	Fortnightly	5-20 working days
Hepatitis E	Antibody	Clotted blood	Weekly	7-10 working days
	HEV RNA	EDTA blood	Monthly / On request	15 working days

RETROVIRUSES				
VIRUS	**TEST**	**SPECIMEN**	**FREQUENCY OF TEST**	**TURNAROUND TIME**
HIV-1 and 2	“HIV test” (antibody / antigen detection)	Clotted blood	Daily (Mon - Sun)	1-2 working days *Same day if urgent*
	HIV-1 RNA (viral load)	EDTA blood	4-5 times / week	2-5 working days
	HIV-1 genome (DNA and RNA)	EDTA blood	Weekly (Mon)	2-6 working days
	HIV-1 resistance testing	EDTA blood	Twice weekly (Mon & Weds)	3-9 working days
	HIV-2 RNA (viral load)	EDTA blood	Fortnightly	5-20 working days
	HIV-2 genome (DNA and RNA)	EDTA blood	Fortnightly	5-20 working days
HTLV-1 and 2	IgG screening	Clotted blood	Daily (Mon – Sun)	1-3 working days

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HERPESVIRUSES	**If the specimen type is not specified contact the Medical Virologist**			
VIRUS	**TEST**	**SPECIMEN**	**FREQUENCY OF TEST**	**TURNAROUND TIME**
Cytomegalovirus (CMV)	CMV IgG + IgM	Clotted blood	Daily (Mon – Sun for IgG Mon- Fri for IgM)	1-2 working days
	CMV IgG avidity	EDTA blood	On demand (Contact Medical Virologist)	2 working days
	CMV DNA qualitative detection (This test has replaced CMV DEAFF test and CMV culture)	EDTA blood, CSF, urine, broncho-alveolar lavage	3 times/week (Mon, Weds, Fri)	2-3 working days
	CMV DNA quantification	EDTA blood	Twice weekly (Tues & Thurs)	2-7 working days
Epstein Barr Virus (EBV)	EBV IgG antibodies	Clotted blood	Weekly (Weds)	3-8 working days
	EBV IgM	Clotted blood	Weekly (Thurs)	3-8 working days
	EBV DNA qualitative detection	CSF	3 times / week (Mon, Weds, Fri)	2-3 working days
	EBV DNA quantification	EDTA blood	Twice weekly (Tues & Thurs)	2-7 working days
Herpes Simplex (HSV)	Serology (usually <u>not</u> helpful) Please telephone to discuss	Clotted blood	Reference lab test (PHE, Colindale)	15 working days
	HSV-1 and 2 DNA detection (This test has replaced both tissue culture and EM of vesicle fluid)	Swab in VTM, CSF, broncho-alveolar lavage	Swabs: Daily (Mon - Fri) Other (e.g. CSF): 3 times / week (Mon, Weds, Fri)	2-3 working days
Varicella Zoster Virus (VZV)	VZV IgG screen	Clotted blood	3 times / week (Urgent samples on demand)	2-6 working days *Same day if urgent*
	VZV IgM (Rarely useful: CSF or swab of skin/mucosal lesion for VZV-DNA detection is usually more helpful)	EDTA blood	On demand if clinically indicated: contact Medical Virologist	2-6 working days
	VZV DNA detection	Swab in VTM, CSF	Swabs: Daily (Mon - Fri) Other (e.g. CSF): 3 times / week (Mon, Weds, Fri)	Up to 5 working days
Human Herpes viruses 6 & 7	HHV6 & HHV7 DNA detection	CSF	Reference lab test (PHE, Colindale)	15 working days

Human Herpes virus 8	HHV8 DNA qualitative detection	EDTA blood	3 times / week (Mon, Weds, Fri)	Up to 5 working days
	HHV8 DNA quantification	EDTA blood	Weekly (Fri)	Up to 20 working days

EXOTIC / TROPICAL VIRUSES				
VIRUS	**TEST**	**SPECIMEN**	**FREQUENCY OF TEST**	**Ref Lab TURNAROUND TIME**
Exotic viruses e.g. dengue, yellow fever, West Nile Virus	Antibody / viral nucleic acid	EDTA blood	Reference lab test (PHE Porton Down)	15 working days

SCREENING				
BATTERY	**TESTS**	**SPECIMEN**	**FREQUENCY OF TEST**	**TURNAROUND TIME**
Antenatal screen	HBsAg, HIV, syphilis & Rubella IgG	EDTA blood	Daily (Mon – Sun)	1-2 working days *Same day if urgent*
Occupational Health Screen	May include: HBsAg, anti-HBs, Rubella IgG, VZV IgG & Measles IgG	Clotted blood	Daily (Mon – Sun) except for VZV IgG (5 times / week)	2-3 working days *Same day if urgent*
Needlestick / sharps DONOR screen	HBsAg, HIV, anti-HCV, syphilis	Clotted blood	Daily (Mon – Sun)	1 working day
Needlestick / sharps RECIPIENT	Save sample	EDTA blood	These baseline samples are archived. They are only tested in the event that a follow-up test on the individual shows them to have an infection that might have been acquired from the sharps injury.	

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OTHER VIRUSES (OR INFECTIVE AGENTS FOR WHICH ROUTINE TESTING IS PERFORMED IN THE VIROLOGY LABORATORY) IN ALPHABETICAL ORDER				
VIRUS / AGENT	**TEST**	**SPECIMEN**	**FREQUENCY OF TEST**	**TURNAROUND TIME**
16S PCR	16S rDNA identification of bacterial pathogens	Tissue	Weekly	5-7 working days
Adenovirus	Faecal adenovirus (serotypes 40 & 41) DNA detection by PCR	Faeces	Daily (Mon – Sat) if required	1-2 working days
	Adenovirus DNA detection by PCR (This test has replaced direct immunofluorescence and tissue culture)	Nasopharyngeal aspirate / throat washing, conjunctival swab in VTM[7]	Daily (Mon – Sat) if required	1-2 working days
	Adenovirus DNA quantification	EDTA blood. Stem cell transplant patients only. (For other patients/specimens contact the on-call Virologist)	Twice Weekly (Tues & Thurs)	2-7 working days
Anti-Streptolysin O	ASO	EDTA Blood	Daily (Mon – Fri)	1-2 working days
BK virus	BKV DNA detection	Urine	3 times / week (Mon, Weds, Fri)	2-3 working days
Brucella		EDTA blood	Daily (Mon – Fri)	1-2 working days
	Confirmatory testing		Reference lab test (BRU, Liverpool)	
Chlamydia and Gonorrhoea	CT/GC NAAT screen	1. For first catch urine (FCU), transport to laboratory ideally within 48 hours (unless placed directly in to Aptima Urine transport media, GUM ONLY). 2. Specimens older than 7 days cannot be processed. 3. Specimens usually retained for 7 days after testing. 4. Unisex/self-taken vaginal swabs routinely available for GUM Clinic specimens. All other users by local arrangement.	Daily (Mon – Fri)	1-3 working days *Same day if urgent*

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VIRUS / AGENT	TEST	SPECIMEN	FREQUENCY OF TEST	TURNAROUND TIME
Enteroviruses & Parechoviruses e.g. coxsackie A and B, ECHOvirus and poliovirus	Enterovirus RNA detection	CSF in meningitis or encephalitis Faeces (or rectal swab in VTM if no stool specimen is available), throat swab in VTM	3 times / week (Mon, Weds, Fri)	2-7 working days
	Enterovirus IgM	EDTA blood	Reference lab test (PHE Epsom)	10 working days
H pylori	Stool antigen	Faeces	Daily (Mon – Fri)	1-2 working days
JC Virus	JCV DNA detection	CSF	3 times / week (Mon, Weds, Fri)	2-3 working days
Lyme	Screening antibody test	EDTA blood	Daily (Mon – Fri) (Urgent samples on demand)	2-3 working days *Same day if urgent*
	Confirmatory antibody tests	EDTA blood, CSF	Reference lab test (PHE Porton Down, Southampton)	15 working days
Measles	Measles RNA detection	Throat swab in VTM Urine EDTA blood Oral fluid (“oracol”)	Reference lab test (PHE CfI, Colindale)	15 working days
	Measles IgM	EDTA blood	Reference lab test (PHE CfI, Colindale)	10 working days
	Measles IgG screen (Limited indications – please contact Virologist to discuss.)	EDTA blood	Daily (Mon – Fri) (Urgent samples on demand)	1-3 working days Same day if urgent
MRSA	MRSA screen	Red topped swab	Daily (Mon – Sat)	1-2 working days *Same day if urgent*
Mycoplasma		EDTA Blood	Twice a week (day varies)	2-3 working days
Parvovirus B19	Parvovirus IgG and IgM	EDTA blood	Twice weekly (Tues & Thurs)	1-7 working days
	Parvovirus DNA detection	EDTA blood	Reference lab tests (PHE, Colindale)	15 working days

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VIRUS / AGENT	TEST	SPECIMEN	FREQUENCY OF TEST	TURNAROUND TIME
Respiratory viruses i.e. influenza viruses, RSV, Para-influenza viruses, adenovirus and metapneumovirus	Viral nucleic acid detection by PCR (This test has replaced direct immunofluorescence and viral culture)	Nose & throat swab in VTM, BAL, NPA.	Daily (Mon – Sun)	1-2 working days
H5 Influenza A: Contact Virologist immediately - Air call Medical Virologist through the UCLH switchboard				
Rotavirus	Rotavirus RNA detection	Faeces, vomit	Daily (Mon – Sun) if required	1-2 working days
Rubella	Rubella IgG screen	Clotted blood	Daily (Mon – Sun)	1-2 working days *Same day if urgent*
	Rubella IgM	clotted blood	Weekly (Thurs)	1-2 working days *Same day if urgent*
Syphilis	Treponema pallidum antibody detection (and additional serological tests, including reference lab testing at PHE CfI Colindale, as appropriate)	EDTA blood (For other specimens including CSF, contact Microbiology Serology lab on UCH 78994)	Daily (Mon – Sun)	1-2 working days Same day if urgent
	Treponema pallidum DNA PCR	Swab in VTM	Daily (Mon – Fri)	Up to 5 working days
Toxoplasma	IgG and IgM antibody	Clotted blood	Daily (Mon – Fri)	1-2 working days
	Confirmatory antibody tests	Clotted blood	Reference lab test (Swansea)	15 working days

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OTHER INVESTIGATIONS WHERE TESTS ARE PERFORMED BY REFERENCE LABORATORIES		
VIRUS / AGENT / TESTS	**SPECIMEN**	**REFERENCE LABORATORY ***
Anaplasma (Ehrlichia) serology	Blood	PHE, Porton Down
Anti-DNase B (Streptococcal) antibodies	Blood	PHE, Colindale
Aspergillus serology	Clotted blood / serum	Mycology Reference Centre, Leeds
Avian antigens	Clotted blood / serum	Mycology Reference Centre, Leeds
B pseudomallei (melioidosis)	Clotted blood / serum	PHE, Colindale
Bartonella serology	Blood	PHE, Colindale
Blastomyces serology	Clotted blood / serum	Mycology Reference Laboratory, Bristol
Bordetella pertussis serology	Blood	PHE, Colindale
Bordetella pertussis PCR For hospitalised patients < 1 year old ONLY	URT swab, NPA, tracheal aspirate, sputum, BAL	PHE, Colindale
For patients > 1 year old		Micropathology Ltd, Coventry
Campylobacter serology	Blood	Preston Microbiology Services
Candida serology	Clotted blood / serum	Mycology Reference Centre, Leeds
Coccidioides serology	Clotted blood / serum	Mycology Reference Laboratory, Bristol
Coxiella burnetti (Q fever)	Blood	PHE, Porton Down
Darunavir levels	Blood	Lab21 Ltd, Cambridge
Dimorphic fungi	Clotted blood / serum	Mycology Reference Laboratory, Bristol
Diphtheria antibody levels	Clotted blood / serum	Vaccine Evaluation Unit, Manchester
E coli serology	Clotted blood / serum	PHE, Colindale
Galactomannan antigen	Clotted blood / serum	Mycology Reference Laboratory, Bristol
Gancyclovir levels	Clotted blood / serum	Regional Antimicrobial Reference Laboratory, Bristol
H ducreyii	Swab for molecular testing	PHE, Colindale
H influenzae antibody levels	Clotted blood / serum	Vaccine Evaluation Unit, Manchester
Histoplasma serology	Clotted blood / serum	Mycology Reference Laboratory, Bristol
JC virus antibody	Clotted blood / serum	PHE, Colindale
Leptospira	Clotted blood / serum	Leptospira Reference Unit, Hereford
LGV	Swab for molecular testing	PHE, Colindale

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VIRUS / AGENT / TESTS	SPECIMEN	REFERENCE LABORATORY*
Meningococcal antibody	Clotted blood / serum	Vaccine Evaluation Unit, Manchester
Meningococcal PCR	EDTA whole blood	Meningococcal Reference Unit, Manchester
Paracoccidiodes serology	Clotted blood / serum	Mycology Reference Laboratory, Bristol
Pneumococcal antibody	Clotted blood / serum	Vaccine Evaluation Unit, Manchester
Pneumococcal PCR	EDTA whole blood	Meningococcal Reference Unit, Manchester
Rabies serology	Blood	Animal Health & Vet Labs Agency, Weybridge
Rickettsial serology	Blood	PHE, Porton Down
Salmonella serology	Clotted blood / serum	PHE, Colindale
Staphylococcal antibodies	Blood	PHE Colindale
Streptococcal antibodies	Blood	PHE Colindale
Tetanus antibody level	Clotted blood / serum	Vaccine Evaluation Unit, Manchester
VHF specimens (following a discussion with the on-call Virologist)	EDTA whole blood	PHE, Porton Down
Whipples PCR	EDTA blood / CSF	Camelia Botnar Laboratories, GOSH
Yersinia serology	Clotted blood / serum	PHE, Colindale

*More information is available if required

Appendix 1

CPA

Clinical Pathology Accreditation (UK) Ltd
Registered in England & Wales No. 2675095

Certificate of Accreditation

Clinical Pathology Accreditation (UK) Ltd certifies that:

Department of Clinical Virology

UCL NHS Foundation Trust

University College London Hospital

60 Whitfield Street

London

Has been assessed to be in conformance with "Standards for the Medical Laboratory"

CPA Reference Number: 0543

(Chairman CPA)

(Chief Executive CPA)

DATE: MAY 2014

This certificate is only valid if the department holds a current letter of accreditation from CPA (UK) Ltd

IBMS INSTITUTE OF BIOMEDICAL SCIENCE

The Royal College of Pathologists
Pathology: the science behind the cure

The Association for Clinical Biochemistry

Association of Clinical Pathologists

CPA is supported by the professional bodies

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Appendix 2
EQA schemes subscribed to by the Department of Clinical Virology at UCLH

NEQAS
Blood borne viruses
C.trachomatis & N.gonorrhoeae
CMV DNA quantification
Diagnostic serology exanthem
Diagnostic serology hepatitis
EBV DNA quantification
HBV DNA quantification
HCV RNA detection
HIV serology
HIV-1 RNA quantification
Immunity screen
Measles IgG serology
MRSA screen
Rubella IgG serology
Syphilis serology
Toxoplasma serology
Virus identification
Viruses in CSF
QCMD Quality Control for Molecular Diagnostics http://www.qcmd.org/
Adenovirus DNA
Chlamydia trachomatis DNA
CMV DNA
EBV DNA
Enterovirus RNA
HBV DNA
HBV drug resistance typing
HBV genotype
HCV genotype
HCV RNA
HEV RNA
HIV DNA

QCMD Quality Control for Molecular Diagnostics http://www.qcmd.org/
HIV drug resistance typing
HIV drug resistance typing (integrase)
HIV RNA
HPV DNA
HSV DNA
Influenza virus A & B RNA
JC & BK virus DNA
Metapneumovirus RNA
Methicillin resistant S.aureus DNA
Neisseria gonorrhoeae DNA
Norovirus RNA
Parainfluenza virus RNA
Parechovirus RNA
RSV RNA
Viral gastroenteritis
VZV DNA
Instand http://www.instandev.de/en/eqas.html
HDV serology
HEV IgG and IgM
Quality Control Centre Switzerland (www.cscq.ch).
Lyme IgG and IgM
Labquality (Finland) http://www.labquality.fi/?lang=en
Helicobacter Pylori antibodies
Mycoplasma antibodies
Parvovirus antibodies
Interlaboratory Exchange samples
16s
Syphilis PCR
KSHV (HHV8)
HIV 2 VL

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Appendix

Links

Please note: links are only correct at time of printing

Linked to Controlled Document

- **Document**: **MSP-QP-UserNeeds: Microbiology Specialty User Needs and Requirements Procedure** *v1.1* (Superseded)
- **SOP**: **VIR-LP-TOXOSerol: Laboratory Testing for Toxoplasma** *v2.2* (Authorised)
- **Document**: **MSP-QP-UserNeeds: Microbiology Specialty User Needs and Requirements Procedure** *v2.0* (Authorised)
- **SOP**: **VIR-LP-SendAway: Handling Reference Laboratory Requests and Results** *v9.3* (Under Review)
- **SOP**: **VIR-LP-BMTPCR: CMV, EBV & Adenovirus Quantitative PCR** *v8.1* (Authorised)
- **SOP**: **VIR-LP-SendAway: Handling Reference Laboratory Requests and Results** *v9.3* (Draft)

Linked to Weblink

- **http://insight/departments/MedicineBoard/Pathology/Virology/Pages/default.aspx** – UCLH insight virology page
- **http://www.uclh.nhs.uk/GPs+healthcare+professionals/Clinical+services/Pathology/Pathology+-+Virology** – Virology page on UCLH website

Document Revision History

Superseded on 03-Feb-2015 16:44 by Jim Waite

Version 15.2 superseded by version 16.0

Authorised on 03-Feb-2015 16:44 by Jim Waite

Authorised version 16.0 - This to be Version 16. The following users will be notified when a review is due for this document: Shelley Wilson

Draft Created on 03-Feb-2015 16:39 by Jim Waite

Reason: Amended to be Version 16

Superseded on 03-Feb-2015 16:30 by Jim Waite

Version 15.1 superseded by version 15.2

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Authorised on 03-Feb-2015 16:30 by Jim Waite

Authorised version 15.2 - . The following users will be notified when a review is due for this document: Shelley Wilson

Draft Created on 24-Jun-2014 16:54 by Jim Waite

Reason: To generate word version to work on

Superseded on 10-Nov-2013 13:04 by Jim Waite

Version 15.0 superseded by version 15.1

Authorised on 10-Nov-2013 13:04 by Jim Waite

Authorised version 15.1 - To reflect lab at 307 ER. The following users will be notified when a review is due for this document: Jim Waite

Draft Created on 31-Oct-2013 10:42 by Jim Waite

Reason: For move to 307ER

Superseded on 12-Jun-2013 16:57 by Jim Waite

Version 14.3 superseded by version 15.0

Authorised on 12-Jun-2013 16:57 by Jim Waite

Authorised version 15.0 - Major review to include update of references to HPA/HPC, inclusion of sample volume, inclusion of uncertainties, more robust guidance on completion of request forms, transportation guidelines, time limits for urgent testing. The following users will be notified when a review is due for this document: Bruce Macrae, Eleni Nastouli, Jim Waite

Draft Created on 29-Apr-2013 13:41 by Jim Waite

Reason: New version required for review - several additions & amendments required following CPA inspection.

Superseded on 01-Mar-2013 17:12 by David Baker (Inactive)

Version 14.2 superseded by version 14.3

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Authorised on 01-Mar-2013 17:12 by David Baker (Inactive)

Authorised version 14.3 - Updated with respect to MRSA, Chlamydia TAT and specimen advice tables.

Included section on Microbiology serology TAT and specimen advice tables.. The following users will be notified when a review is due for this document: Paul Grant, Eleni Nastouli

Draft Created on 01-Mar-2013 17:09 by David Baker (Inactive)

Reason: Update sections on MRSA, Chlamydia, Microbiology serology

Superseded on 23-Aug-2012 11:26 by David Baker (Inactive)

Version 14.1 superseded by version 14.2

Authorised on 23-Aug-2012 11:26 by David Baker (Inactive)

Authorised version 14.2 - Updated document regarding contact details/address following relocation from Windeyer to 60 Whitfield Street.. The following users will be notified when a review is due for this document: David Baker, Eleni Nastouli

Draft Created on 23-Aug-2012 11:24 by David Baker (Inactive)

Reason: Updated document

Superseded on 14-Apr-2010 13:14 by Steve Rice (Inactive)

Version 14.0 superseded by version 14.1

Authorised on 14-Apr-2010 13:14 by Steve Rice (Inactive)

Authorised version 14.1 - Added page ommited from test repertoire table. The following users will be notified when a review is due for this document:

Eleni Nastouli, Steve Rice

Draft Created on 12-Apr-2010 10:20 by Steve Rice (Inactive)

Reason: To add ommitted information to test repertoire table.

Authorised on 06-Apr-2010 15:28 by Steve Rice (Inactive)

Authorised version 14.0 - First version on iPassport. Have combined previous version from Lab Passport with external documents to give a single document in the standardised user manual format.. The following users will be notified when a review is due for this document:

Eleni Nastouli, Steve Rice, Paula Wilks

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Review Task Completed on 31-Mar-2010 10:02 by Steve Rice (Inactive)

Steve Rice completed task, ""

Creation on 02-Jan-2009 14:32 by Steve Rice (Inactive)

New Policy created

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